Key issues framing today's decisions

The United States must maintain the necessary capability in nuclear weapons technology to provide stewardship of the remaining stockpile, provide technological option and assessment capability, and provide the capability to maintain, modify, and produce weapons when necessary. Technological competence and capability is not sustained simply by maintaining existing, deployed systems. Historically, it has been sustained by a "natural process" brought about by the development/test/production cycle. This is similar to the dilemma now faced by the DoD in maintaining its technical base. An active strategy should be developed to provide for long-term competence and for confidence in the safety, reliability, and relevance of the nation's nuclear force.

The laboratories will be an integral—in fact central—element of the redefined weapons complex. They will also play a vital role in providing the research and technology needed to enable the transition to it. Cost-effective stewardship of the nation's nuclear capability cannot be obtained simply by reconfiguring and downsizing today's capabilities; R&D investments must be made to make it possible and to bound its cost. The laboratories will have to invest in and develop capabilities ranging from more adequate above-ground facilities, to demonstration of lower-waste, lower-cost plutonium processing and fabrication technologies, to more cost-effective technologies for supporting environmental-management goals for the complex.

Although Congress has adopted plans to phase out nuclear testing, it should be recognized that such testing has been a vital element in maintaining long-term competence and confidence in the safety and performance of the nuclear force. Safeguards and investments in appropriate facilities for above-ground simulations and experiments are crucial to ameliorating the effects on technical competence of stringent test limits or a test ban. In particular, investments in improved hydrodynamic testing capabilities and in computational enhancements are now urgent.

Innovation and competence in weapons science and technology areas are critically bolstered by the continued presence at the laboratories of a range of program activities that is broader than their central nuclear-weapons mission. This diversity also enhances the potential for technology transfer and commercialization.

A more than one-third reduction through 1993 (and perhaps an additional 20 percent reduction in 1994) in the level of effort in research, development, and testing has made laboratory consolidation an increasingly important issue. Future RD&T funding is projected to fall below the critical level at which substantial changes in the present architecture of the RD&T complex must be examined. If so, we must consider a careful shift of laboratory missions in a way that preserves the necessary expertise and facilities, provides adequate mechanisms for intellectual competition and peer review, and maintains the quality of such a reduced program.

The national interest places very high value on slowing or preventing proliferation of weapons of mass destruction. Competent weapons-program expertise is required to develop detection and materials-accountability technologies as well as to assess intelligence data.

The DOE must make the transition to a Minimum Complex 21 that supports the new goals and requirements outlined in the main text. The expertise of the weapons Laboratories should be an integral component of this transition. Despite the termination of plutonium fabrication at Rocky Flats, the U.S. will still need to reestablish a long-term facility for nuclear-materials storage and processing as well as a small but flexible fabrication capability to support the stockpile. The laboratories should provide and demonstrate technology for the future U. S. plutonium capability as well as technologies for cleanup of Rocky Flats.

There will likely be ongoing public concern regarding nuclear waste and related issues. The potential of accelerator alternatives for tritium production, waste transmutation, and conversion of weapons-grade plutonium should be aggressively evaluated as possible ways to ameliorate and benefit from these issues economically. □